

1. A cement producing system, comprising:

a rotary kiln;

a riser duct having an upper portion and a lower portion, wherein said lower portion is communicably connected to said rotary kiln to pass process materials

5 therethrough and to said rotary kiln;

a down draft calciner having an upper portion and a lower portion, wherein said lower portion is communicably connected to said lower portion of said riser duct;

a tertiary duct communicably connected to said upper portion of said down draft calciner and to receive heated tertiary gas therefrom; and

10 a suspension burner operably disposed in said down draft calciner in a manner to permit receipt of combustible waste derived fuel and suspension of said waste in said down draft calciner.

2. The cement producing system of claim 1, wherein said lower portions are

connected in a manner to permit residual noncombustible solid waste to pass to said

15 rotary kiln by gravity.

3. The cement producing system of claim 1, wherein said suspension burner includes a plurality of support fingers each said finger having a waste support surface, wherein said fingers are removably disposed in said down draft calciner in a manner to provide for self cleaning of said support surface upon removal from said down draft calciner.

20 4. The cement producing system of claim 3, wherein said suspension burner includes means for automatically retracting said fingers from said down draft calciner.

5. The cement producing system of claim 1, which further includes means for automatically feeding said combustible waste derived fuel onto said support surface of said fingers.

6. The cement producing system of claim 1, which further includes means for  
5 drawing resultant gas produced from combusting said waste derived fuel by said tertiary gas through to said riser duct.

7. The cement producing system of claim 1, further comprising at least one preheater in the form of a cascade of cyclone separators upstream of said riser duct.

8. The cement producing system of claim 5, wherein said feeding means includes an  
10 elevator to raise said waste derived fuel, an unloading station, a conveyor belt to receive the waste derived fuel from the unloading station and deliver into said suspension burner, and a control sensor operably connected to said conveyor belt for sensing when conditions in said down draft calciner are suitable for feeding said waste derived fuel and controlling said conveyor belt feed rate in accordance with said sensed conditions.

15 9. A method of producing cement, comprising:

(a) delivering waste derived fuel to a suspension burner operably disposed in a down draft calciner in a manner to permit receipt of combustible waste derived fuel and suspension of said waste derived fuel in said down draft calciner;

20 (b) introducing a tertiary gas into an upper portion of said down draft calciner in a manner to cause combustion of said waste derived fuel; and

(c) passing said combusted waste derived fuel into a riser duct which is communicably connected to a rotary kiln in a manner to pass process materials and combusted materials to said rotary kiln.

10. A method according to claim 9, wherein said waste derived fuel includes tires.
11. A method according to claim 9, which further includes sensing combustion conditions in said calciner and delivering said waste derived fuel to said suspension burner upon sensing a predetermined combustion condition.
- 5    12. A method according to claim 9, wherein said suspension burner includes a plurality of retractable support fingers and further includes the step of removing at least one of said fingers through a slotted surface in a mounting face connected to said calciner such that removal thereof results in cleaning residual waste from said finger.
13. A method according to claim 11, wherein said the step of removing finger is
- 10    performed automatically.